

Please Amend the Claims as Follows:

2. (Amended) A method for producing two domains within a liquid crystal layer comprising the steps of:

forming a ~~first electrode pixel electrode~~ and a ~~second electrode common electrode~~ on a surface of a substrate, the electrodes being separated from each other by a selected distance;

forming a liquid crystal layer having liquid crystal molecules on the substrate surface with the liquid crystal molecules aligned vertically with respect to the substrate surface; and

applying an electric field between the two electrodes, wherein a domain boundary is formed midway between the electrodes within the liquid crystal layer,

wherein the step of forming the liquid crystal layer comprises steps of forming a homeotropic alignment layer on the substrate surface on which the ~~first and second electrodes~~ ~~pixel and common electrodes~~ are formed, and forming the liquid crystal layer on the homeotropic alignment layer, and

wherein any additive used with the liquid crystal molecules is a non-dye additive.

7. (Amended) A liquid crystal display device comprising:

a base substrate having a surface;

a ~~first electrode pixel electrode~~ formed on the surface of the base substrate;

a ~~second electrode common electrode~~ formed on the same surface of the base substrate, wherein the ~~first electrode pixel electrode~~ and the ~~second electrode common electrode~~ are spaced apart for application of an electric field therebetween;

a liquid crystal layer formed on the base substrate surface and including liquid crystal molecules for alignment normal to the base substrate surface in an absence of the electric field between two electrodes; and

a second substrate together with said base substrate and said liquid crystal layer forming a panel upon which an optical compensating plate is formed,

wherein in the presence of the electric field between the two electrodes, the molecules are tilted towards a central region between the two electrodes, and wherein any additive used with the liquid crystal molecules is a non-dye additive.

8. (Original) The liquid crystal display of claim 7, further comprising a homeotropic alignment layer formed adjacent at least one of upper and lower surfaces of the liquid crystal layer.

9. (Original) The liquid crystal display device of claim 7, wherein the liquid crystal layer is formed of a material having a property of positive dielectric anisotropy.

11. (Original) The liquid crystal display device of claim 10, wherein the optical compensating plate is made of a negatively birefringent index liquid crystal film.

12. (Original) The liquid crystal display device of claim 7, wherein the ~~first electrode pixel electrode~~ is a pixel electrode, and the ~~second electrode common electrode~~ is a counter electrode.

13. (Original) The liquid crystal display device of claim 12, wherein each of the pixel and counter electrodes is made of an transparent metal film.

14. (Original) The liquid crystal display device of claim 8, wherein the liquid crystal layer is formed of a material having a property of positive dielectric anisotropy.

16. (Amended) The liquid crystal display device of claim 8, wherein the optical compensating plate is made of a liquid crystal film including the negatively birefringent index molecules.

17. (Original) The liquid crystal display device of claim 8, wherein the ~~first electrode pixel electrode~~ is a pixel electrode, and the ~~second electrode common electrode~~ is a counter electrode.

18. (Original) The liquid crystal display device of claim 17, wherein each of the pixel and counter electrodes is made of a transparent film.

19. (Amended) A liquid crystal display device comprising:

a substrate;

a ~~first electrode pixel electrode~~ formed on a surface of the substrate;

a ~~second electrode common electrode~~ formed on the surface of the substrate,

wherein the ~~first electrode pixel electrode~~ and the ~~second electrode common electrode~~ are spaced apart for application of an electric field therebetween;

a liquid crystal layer formed on the surface of the substrate and including liquid crystal molecules;

a homeotropic alignment layer formed adjacent at least one of upper and lower surfaces of liquid crystal layer; and

an optical compensating plate formed on a layer on at least one side of upper and lower portions of the liquid crystal layer,

wherein in the presence of the electric field between the two electrodes, the molecules are tilted toward a central region between the two electrodes, and

wherein any additive used with the liquid crystal molecules is a non-dye additive.

20. (Original) The liquid crystal display device of claim 19, wherein the optical compensating plate is made of a liquid crystal film including a plurality of molecules of negatively birefringent index molecules.

21. (Original) The liquid crystal display device of claim 19, wherein the liquid crystal molecules have a property of positive dielectric anisotropy.

22. (Original) The liquid crystal display device of claim 19, wherein the ~~first electrode pixel electrode~~ is a pixel electrode, and the ~~second electrode common electrode~~ is a counter electrode.

23. (Original) The liquid crystal display device of claim 22, wherein each of the pixel and counter electrodes is made of a transparent film.

24. (Amended) A liquid crystal display device comprising:
a first substrate having an inner surface and an outer surface opposite the inner surface;
a second substrate disposed opposite the first substrate and having an inner surface and an outer surface opposite the inner surface;
a liquid crystal layer sandwiched between the inner surfaces of the two substrates and including liquid crystal molecules;
a ~~first electrode pixel electrode~~ and a ~~second electrode common electrode~~ formed on the inner surface of the first substrate, wherein the ~~first electrode pixel electrode~~ and the ~~second electrode common electrode~~ are spaced apart for application of an electric field therebetween;
homeotropic alignment layers respectively formed on the inner surface of the first substrate and on the inner surface of the second substrate; and
an optical compensating plate disposed on at least one of the outer surfaces of the first and second substrates,
wherein in a presence of the electric field between the two electrodes, the molecules are tilted from the respective electrodes towards a central region between the two electrodes, and
wherein any additive used with the liquid crystal molecules is a non-dye additive.

25. (Original) The liquid crystal display device of claim 24, further comprising a polarizer disposed outside the first substrate.

26. (Original) The liquid crystal display device of claim 25, further comprising an analyzer layer disposed outside the second substrate.

27. (Original) The liquid crystal display device of claim 24, wherein the optical compensating plate is made of a liquid crystal film including a plurality of molecules of negative birefringent index.

28. (Original) The liquid crystal display device of claim 25, wherein an angle between an axis of the polarizer and a direction of the electric field is about 45 degrees.

29. (Original) The liquid crystal display device of claim 26, wherein an angle between the axis of the polarizer and an axis of the analyzer is about 90 degrees.

30. (Original) The liquid crystal display device of claim 24, wherein the liquid crystal layer is formed of a material having a property of positive dielectric anisotropy.

31. (Original) The liquid crystal display device of claim 24, wherein ~~the first electrode pixel electrode~~ is a pixel electrode, and the ~~second electrode common electrode~~ is a counter electrode.

32. (Original) The liquid crystal display device of claim 31, wherein each of the pixel and counter electrodes is made of a transparent metal film.

33. (Amended) A liquid crystal display device, comprising:
a first substrate having an inner surface and an outer surface opposite the inner surface;
a second substrate having an inner surface and an outer surface opposite the inner surface and disposed opposite the first substrate;

a liquid crystal layer sandwiched between the inner surfaces of the two substrates and including liquid crystal molecules;

a pixel electrode and a counter electrode formed on the inner surface of the first substrate, wherein the pixel electrode and the counter electrode are spaced apart for application of an electric field therebetween for aligning the liquid crystal molecules between the two electrodes along electric field lines of the electric field;

homeotropic alignment layers respectively formed on the inner surface of the first substrate and on the inner surface of the second substrate;

a polarizer disposed on the outer surface of the first substrate;

an optical compensating plate disposed on the outer surface of the second substrate, and

an analyzer disposed on the optical compensating plate,

wherein in the presence of the electric field between the pixel electrode and the counter electrode, the molecules are tilted along said electric field lines towards a central region between the two electrodes where the liquid crystal molecules are aligned normal to the inner surfaces of the two substrates, and

wherein any additive used with the liquid crystal molecules is a non-dye additive.

34. (Original) The liquid crystal display device of claim 33, wherein the liquid crystal layer is formed of a material having a positively dielectric anisotropy.

35. (Original) The liquid crystal display device of claim 33, wherein an angle between an axis of the polarizer and a direction of the electric field is about 45 degrees.

36. (Original) The liquid crystal display device of claim 33, wherein an angle between an axis of the polarizer and an axis of the analyzer is about 90 degrees.

37. (Original) The liquid crystal display device of claim 33, wherein the optical compensating plate is made of a liquid crystal film including a plurality of molecules of negative birefringence index.

38. (Original) The liquid crystal display device of claim 33, wherein each of the pixel and counter electrodes is made of a transparent metal film.

39. (Original) A liquid crystal display device comprising:
a first substrate having an inner surface and an outer surface opposite the inner surface;
a second substrate having an inner surface and an outer surface opposite the inner surface and disposed opposite the first substrate;
a plurality of gate bus lines and a plurality of data bus lines intersecting the plurality of gate bus lines, arranged in a matrix configuration on a surface of the first substrate and defining a plurality of pixel regions each bounded by a pair of the plurality of gate bus lines and a pair of the plurality of data bus lines;
a liquid crystal layer sandwiched between the inner surfaces of the two substrates and including liquid crystal molecules;
a pixel electrode and a counter electrode formed on the inner surface of the first substrate, wherein the pixel electrode and the counter electrode are spaced apart for application of an electric field therebetween for aligning the liquid crystal molecules between the two electrodes along electric field lines of the electric field;
a plurality of switching devices corresponding respectively to the plurality of pixel regions, each of the plurality of switching devices being connected to a corresponding one of the plurality of data bus lines and a corresponding one of the plurality of pixel electrodes;
homeotropic alignment layers respectively formed on the inner surface of the second substrate and on the inner surface of the first substrate wherein the molecules are aligned normal to said inner surfaces of the two substrates in the absence of said electric field;
a polarizer attached to the outer surface of the first substrate;

an optical compensating plate disposed on the outer surface of the second substrate;

an analyzer disposed on the optical compensating plate,
wherein

in the presence of the electric field between the pixel electrode and the counter electrode, the molecules are tilted along said electric field lines towards a central region between the two electrodes wherein the molecules remain aligned normal to said inner surfaces of the substrates, and

wherein any additive used with the liquid crystal molecules is a non-dye additive.

40. (Original) The liquid crystal display device of claim 39, wherein the liquid crystal layer is formed of a material having a property of positive dielectric anisotropy.

41. (Original) The liquid crystal display device of claim 39, wherein an angle between an axis of the polarizer and a direction of the electric field is about 45 degrees.

42. (Original) The liquid crystal display device of claim 41, wherein an angle between an axis of the polarizer and an axis of the analyzer is about 90 degrees.

43. (Original) The liquid crystal display device of claim 39, wherein the optical compensating plate is made of a liquid crystal film including a plurality of molecules of negative birefringence index.

44. (Original) The liquid crystal display device of claim 39, wherein each of the pixel and counter electrodes is made of a transparent metal film.

45. (New) A method for producing two domains within a liquid crystal layer comprising the steps of:

forming a pixel electrode and a common electrode on a surface of a substrate, the electrodes being separated from each other by a selected distance;

forming a liquid crystal layer having liquid crystal molecules on the substrate surface with the liquid crystal molecules aligned vertically with respect to the substrate surface; and

applying an electric field between the two electrodes, wherein a domain boundary is formed midway between the electrodes within the liquid crystal layer,

wherein the step of forming the liquid crystal layer comprises steps of forming a homeotropic alignment layer on the substrate surface on which the pixel and common electrodes are formed, and forming the liquid crystal layer on the homeotropic alignment layer, and

wherein any additive used with the liquid crystal molecules is a non-dye additive.